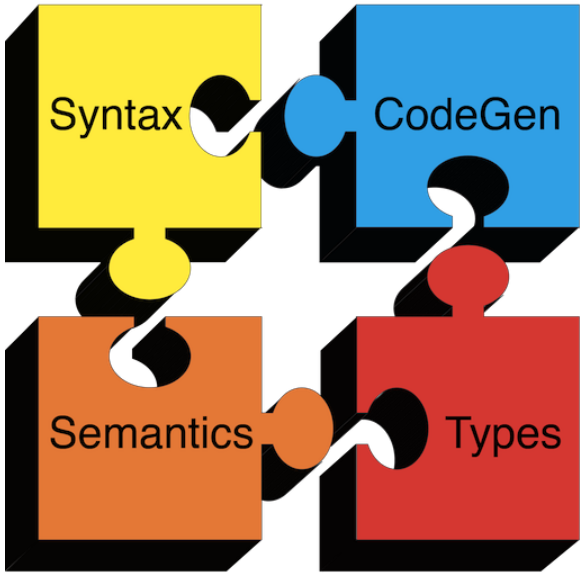

Compilers

Introduction to Semantic Analysis

Alex Aiken

Semantic Analysis

- Lexical analysis
  - Detects inputs with illegal tokens
- Parsing
  - Detects inputs with ill-formed parse trees
- Semantic analysis
  - Last “front end” phase
  - Catches all remaining errors

Semantic Analysis

- Parsing cannot catch some errors
- Some language constructs not context-free

Semantic Analysis

- Checks of many kinds . . . **coolc** checks:
  1. All identifiers are declared
  2. Types
  3. Inheritance relationships
  4. Classes defined only once
  5. Methods in a class defined only once
  6. Reserved identifiers are not misused

  And others . . .

- The requirements depend on the language